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Two rural Louisiana communities were selected to evaluate the effectiveness of certain types of communication in preventing man-caused forest fires. The communities were selected on the basis of differences in fire occurrence rates and other factors related to conservation. Questionnaires and personal interviews were utilized to determine views of inhabitants and access to communication media. The relation of sociocultural factors to fire occurrence rates, the social process of communication, the potential of mass media and informal media in communication of fire prevention messages, and selective perception and effectiveness of fire prevention messages were evaluated. It was recommended that persons with roles as fire prevention change agents design their information programs to reach all the inhabitants of a community after careful appraisal of all available data on local environmental factors. (SW)

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Factors Related to Communication of Forest Fire Prevention Messages

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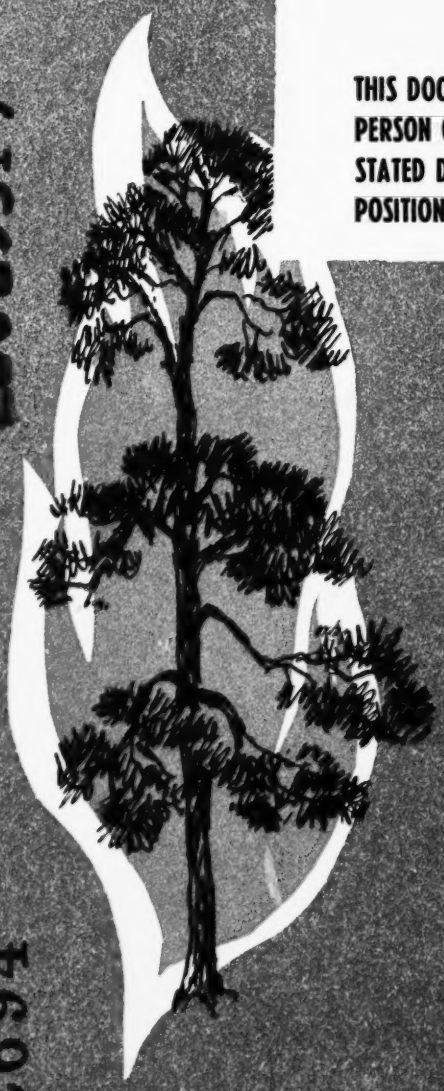

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A Study in Selected Rural Communities

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IN COOPERATION WITH
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Preface

The Fire Prevention Research Project, of which this report is one part, is an ongoing effort directed and sponsored by the Southern Forest Experiment Station of the U.S. Forest Service. This project is centered at Mississippi State University and involves cooperative and coordinated research between members of this university and Louisiana State University, as well as personnel of national, state, and private fire control agencies.

Research for this report was done under the auspices of the Department of Rural Sociology, Louisiana State University.

The authors wish to express gratitude for the full measure of cooperation and assistance given them by other members of the research team—cooperation without which this investigation could never have been completed. Conspicuous contributions were made by Mr. Tony Altobellis, Mr. Wesley Baird, Mr. Tom Croker, Mr. Merlin J. Dixon, Mr. Larry Doolittle, Mr. George Fahnestock, Dr. Berch W. Henry, Dr. W. Jokinen, Dr. Harold Kaufman, Mr. Leroy Shilling, and Dr. Lee Taylor.

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Factors Related to Communication Of Forest Fire Prevention Messages

A Study in Selected Rural Communities

B. Eugene Griessman and
Alvin L. Bertrand*

Introduction

Objectives of the Study

The study described in this report was carried out as one facet of the systematic research program on man-caused forest fires, initiated and sponsored by the Southern Forest Experiment Station of the U.S. Forest Service in cooperation with various state universities. Previous studies were designed to shed light on the number, location, and cost of such fires, the reasons for forest publics setting fires, and the socio-economic characteristics of forest publics.[1] This study was planned in logical sequence to be a further step in developing a fund of knowledge and understanding of man-caused forest fires. The over-all objective was to assess the effectiveness of certain types of communication in fire prevention efforts and to test certain findings of previous studies.

Specific objectives of the study were:

1. To further test the relationship of certain socioeconomic factors to high fire occurrence rates.
2. To determine the extent to which forest publics in a selected area had access to mass media of communication such as radio, television, and the printed word, and to informal media, such as contact with forest rangers and others.
3. To discover how often publics in areas of high fire occurrence were exposed to fire prevention messages.
4. To determine how certain types of fire prevention messages were perceived and interpreted.

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[1]Arthur R. Jones, Jr., "Social and Cultural Foundations of Man-Caused Fires" (unpublished Ph.D. dissertation, L.S.U., 1964); Thomas Hansbrough, "A Sociological Analysis of Man-Caused Forest Fires in Louisiana" (unpublished Ph.D. dissertation, L.S.U., 1961); Jerry W. Robinson, Jr., "The Development of Forestry in Carroll County, Mississippi" (unpublished Master's thesis, Mississippi State University, August, 1964); Max L. Doolittle, "Forest Residents and Forest Fires: A Case Study Approach" (unpublished Master's thesis, Mississippi State University, January, 1967).

Methodological Procedures

After considerable study of fire occurrence rates in various locations in Mississippi and Louisiana, two communities[2]—Chestnut and Beech—were selected for study. These particular communities were selected for several reasons. They were located very close together (5 miles apart) and exhibited many characteristics in common. Both were totally rural and approximately equal in area, with Chestnut including 38,840 acres and Beech 41,600 acres. Both were located in the heart of a vast stretch of pine forest land. Both included about the same number of families—230 families in Chestnut and 240 families in Beech.

However, there was one important difference which suggested the possibility of an experimental design suitable to the objectives of the study. This was the large variation in the 5-year average annual fire occurrence rate in the two communities (fire occurrence rate as used here is the number of fires per one million acres of protected land; that is, land which is under the supervision of some fire protection agency). In Chestnut, a high rate of 2,298 was recorded in 1965. By comparison, a low rate of only 787 was recorded in Beech.

This important differential, plus other less dramatic differences, suggested that there were certain factors operating in Beech to lessen the fire occurrence rate. Thus it was felt that a study of the two communities would not only provide information on the effectiveness of fire protection messages, but would also uncover related factors serving to promote low fire occurrence rates. The latter possibility offered a chance to further test relationships between certain sociocultural factors and high fire rates, although this was not the primary focus of the investigation.

Several procedures were used in the implementation of the study. First, a questionnaire was developed to determine the number of inhabitants with access to radio, TV, newspapers, magazines, etc., and the views of inhabitants toward certain situations related to the setting of woods fires. Pertinent questions about the respondents and their families, such as age, education, and income, were also included. This instrument was pretested and used for personal interviews with 209 adult residents of the two communities. Interviewees were selected by a random procedure which generated 105 interviews in the Chestnut community and 104 in the Beech community.

The second study procedure was designed to determine how well residents of the two study communities perceived and recalled messages contained on fire prevention posters. Four posters were placed by Forest Service personnel at conspicuous places in each community. Precautions were taken to make this preparation appear to be merely a routine task of the Forest Service. Conspicuous sites were chosen to

[2]The term "community" is used in a general sense in this report. No attempt was made to delineate the study communities scientifically, and it may be that they would better be termed neighborhoods. The real names and the location of the communities are not given in the interest of anonymity. The names "Chestnut" and "Beech" are pseudonyms.

assure that every individual within the respective communities would have an opportunity to see at least one poster prior to the interviewing. This procedure was duplicated, in essence, at the local high school which served both communities. Arrangements were made with the principal to place posters within the school buildings. Students were tested later to determine their perception and recall of the poster messages.

The third methodological procedure was related to the interviews. Each interviewee was shown a list of four slogans designed to promote fire prevention. He or she was then asked to interpret each slogan and to react to its message.

The data collected were coded and, insofar as possible, machine-processed. Statistical tests of significance were used to determine the validity and reliability of findings.

Relation of Sociocultural Factors to Fire Occurrence Rates

One of the incidental aims of the study was to test whether or not the same factors which appeared to be related to high fire occurrence rates in other areas would be operative here. In this regard, the striking differential in fire rates between Chestnut and Beech set the stage for a comparative analysis. Sufficient information was obtained from the interviews conducted to test some 13 factors in this way, despite the fact that the questionnaire was designed for another purpose. Of these 13 factors or characteristics, only four were found to vary significantly from the first community to the second.

Ownership of "Open Range" Cattle.—Previous studies have determined that ownership of cattle permitted to graze on open range is associated with fire occurrence rates.[3] Following this clue, an analysis was made of the number of "open range" cattle owners within the sample population in each community. It should be noted that the practice of grazing cattle, sheep, and other livestock on open range dates back to the time of early settlers in much of the Southern region. This practice became so common that many customs and practices, including burning, became traditional over the years.[4] In light of this history, it is understandable why forest residents whose cattle are grazed on unfenced lands, which they do not own, persist in fire-setting behavior.

Among the interviewees, there were 21 cattle owners in the Chestnut community and four in the Beech community who grazed their livestock on open land. This difference may not appear great, but is significant statistically.[5] This finding not only provides one clue to the differential

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[3]Arthur R. Jones, M. Lee Taylor, and Alvin L. Bertrand, *Some Human Factors in Woods Burning* (Baton Rouge, La: La. Agricultural Experiment Station Bulletin No. 601, 1965), pp. 23-25.

[4]For a detailed explanation of the practice of open range grazing and the associated practice of burning, see B. E. Griessman, "The Perception-Retention of Fire Prevention Messages: An Aspect of Communication Research" (unpublished dissertation, Louisiana State University, 1966), pp. 115-120.

[5]$X^2 = 12.947$, $df = 2$, $P < .01$

fire rates in the two communities, but also substantiates the findings of previous studies that the grazing of cattle on open range is associated with woods burning.

Levels of Formal Education.—The fact that education is closely related to behavior patterns has been demonstrated over and over. Thus it is logical to test for differences in formal education when one is attempting to account for any substantial variation in the behavior of given groups or individuals. It was found that the levels of formal education of respondents in the two study communities varied significantly. Specifically, more of the respondents from the low fire-rate area, Beech (46 respondents), than from the high fire-rate area, Chestnut (32 respondents), had completed from 10 to 12 grades of schooling. Conversely, more of the respondents from Chestnut (41) than from Beech (27) had not progressed beyond the seventh, eighth, or ninth grades. The educational attainment of respondents from the two communities is shown in Table 1.

Here again it seems clear that a factor operating to explain differences in fire occurrence rates has been isolated. This finding is also in keeping with the conclusions of previous studies. No doubt the higher formal education of Beech community residents gives them a better opportunity to learn about the destructiveness of uncontrolled burning.

TABLE 1.—Respondents' Reported Formal Schooling, by Communities

Highest grade attended	Chestnut	Beech
No response, refused	0	2
None	2	3
1- 3 grades	7	6
4- 6 grades	16	9
7- 9 grades	41	27
10-12 grades	32	46
College, 1 year or less[a]	2	3
College, 2-3 years	3	3
College, graduated	2	3
College, graduate work[b]	0	2
Total	105	104
$X^2 = 7.945$	$df^c = 4$	$P < .05$

[a]Includes business school attended after completion of high school curriculum.
[b]Includes theological training.

Opinion of Forest Fire Control Agencies.—The third factor in which respondents from the two communities showed differentials was in their opinions of the effectiveness of forest fire control agencies. Every individual interviewed was asked, "What kind of job do you think the forest fire control agencies are doing in this area?" Their responses are shown in Table 2. Only 28 of 105 respondents in the Chestnut community—about one-fourth of the interviewees—thought forest fire prevention personnel were doing an excellent job. By contrast, about half of the

respondents residing in the Beech community (51 out of 104) expressed the feeling that those in charge of fire control work were doing an excellent job. It is also of interest that more people in Chestnut than in Beech rated the work of forest fire control agencies as only average or below average.

It is somewhat risky to draw inferences from the above findings. However, one may assume that those individuals who thought the fire control agencies were doing a good job were more familiar or more in sympathy with their work. This type of attitude, of course, would be consistent with lower fire-setting rates.

TABLE 2.—Respondents' Rating of Fire Control Activities of Forest Agencies

Response	Chestnut	Beech
Excellent	28	51
Good	51	38
Average	16	7
Somewhat below average	1	1
Poor	5	2
Don't know, other	4	5
Total	105	104
$X^2 = 14.616$	df = 5	$P < .01$

Factors on Which Study Communities Did Not Differ.— It is sometimes as important to know those factors which do not appear to be associated with differential behavior as those which show such a correlation. For this reason, it was felt the characteristics in which the two communities exhibited little or no difference should at least be enumerated. In this regard, two points should be kept in mind. First, fire rates were too high in both communities. Second, the listing which appears below does not mean that these factors have no significance in fire-setting behavior. It is known, for example, that income and certain attitudes are important in this respect. However, it can be assumed the factors listed did not account for the higher rate of fires in Chestnut, because there was no difference between this community and Beech in these respects:

1. The respondent's self-esteem and his identification with a social class (that is, how he ranked himself in terms of upper, middle, or lower class).
2. The annual income of respondents.
3. The ranking of the occupation of forest ranger in terms of prestige. (Each respondent was asked to rate the forest ranger in that occupations' relationship to six other selected occupations—auto repairman, electrician, dentist, carpenter, school teacher, and clerk in store.)
4. The attitude toward the amount of land which should be devoted to timber production.
5. The attitude toward the advisability of a career with a lumber or paper company.
6. Whether or not the respondents were home owners.

7. Whether or not the respondents were timber owners.
8. Whether or not magazines or newspapers were read by the respondents.
9. Whether or not the respondents owned and used radios and TV's.

Conclusion

It is possible to draw at least one general conclusion from the findings related to previous studies of factors associated with high fire rates. This is that one can expect rather important sociocultural differences between communities where high fire rates are found and those where low fire rates are characteristic. Although more study is needed, it probably is safe to predict that those communities which are characterized by a larger percentage of cattle owners grazing their livestock on open range, by a larger percentage of residents with less than a high school education, and by a larger percentage of residents who do not feel fire control agencies are doing more than an average job, will have the highest fire occurrence rates. These findings tend to substantiate findings of other studies and offer rather clear clues to the sociocultural characteristics of residents of communities with high fire rates.[6] They provide a steppingstone to other types of investigations, such as those reported in the following pages.

Conceptual Frame of Reference

From a theoretical standpoint, the major aim of this study was conceived as one related to the important social process of communication. This process is usually studied within the context of social systems or groups, because any model which ignores the social structure surrounding the communicants is bound to be inadequate. In other words, communication—basically the process of sending and receiving *messages*—is complicated by the fact that any message which a sender transmits immediately becomes part of a complicated set of interpersonal relations which are influenced by the values of the groups to which the sender and the receiver of the message belong.

It was conceptualized, for the purposes of this study, that two important social systems were involved in a mass communication process. On the one hand, there was what might be termed the "public agency" system, composed of the groups and individuals working in the interest of preventing and/or controlling woods fires. On the other hand, a client system was envisioned as made up of those persons who either deliberately set fires or were in sympathy with those who did. The problem was to determine the effectiveness of communications which had been sent from the first system to the second system, and at the same time to find out the potential for more effective future communication.

Donald F. Cox has suggested that in order to influence an audience in the desired manner by communication, certain conditions must

[6]See Arthur R. Jones, *op. cit.*, and Max L. Doolittle, *op. cit.*

be met: (1) the audience must be *exposed* to the message; (2) members of the audience must interpret or *perceive* correctly that action or attitude which is desired of them by the sender; (3) the audience must remember or *retain* the content of the message the communicator transmitted, and (4) members of the audience must decide whether or not they will be favorably influenced by the communication.[7] In essence, these conditions served as a conceptual model in planning the study, and in the analyses of data collected.

In the simple model used in planning the study, the mass communicator (public agency system) and the recipient of the fire prevention messages sent (client system) were seen as having certain relationships with one another which provided an over-all frame of reference for the investigation. These relationships may be specified as follows:

1. The communicator and recipient of a message are interdependent in the sense of the one having no relevance without the other.

2. The relationship between two systems in communication is such that it must consist of more than a single communication designed to elicit a single reply. Any given communication (message) must necessarily be just one link in a chain of communications which extends over a period of time.

3. This chain of interaction is by no means limited to a simple relationship between communicator and recipient exclusively. Much of the communicator-recipient relationship is indirect and is mediated through other actors and through groups to which the communicators and recipients belong.

4. Both communicators and recipients of messages have definite positions in the social structure. Their respective roles in the communication process tend to be affected by the social context, and their positions are related to one another within the social system.

5. The communications which flow from one individual or one group to another do not appear as random or unrelated acts, but as elements in a total pattern of ongoing interaction. Information or influence thus flows from one person and/or group to another by successive steps; that is, the original recipients of a message tell others, who in turn tell others, and so on.

In the discussions which follow no deliberate effort is made to relate procedures and findings to the above described model. However, it is felt that the reader will have no difficulty in discerning that the analyses are implicitly, if not explicitly, in terms of the above described conceptual frame of reference.

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[7]Donald F. Cox, "Clues for Advertising Strategists," Lewis Anthony Dexter and David Manning White (eds.), *People, Society, and Mass Communication* (New York: The Free Press, Collier MacMillan, 1964), pp. 359 ff.

Potential of Mass Media and of Informal Media For Communication of Fire Prevention Messages

A major purpose, and a logical first step, of this study was to determine the potential of certain types of media for effective communication of fire prevention messages. It was assumed that fire prevention messages could be sent via mass media—such as radio, TV and the printed word—and by personal exchanges with and between members of the client public. The problem, therefore, was to determine how many individuals in the study communities had access to the various types of mass media, and how many were acquainted with or knew Forest Service personnel. In order to obtain the desired information, all respondents were queried with regards to their ownership and use of radios and TV's, and with regards to their subscriptions to and reading habits related to newspapers and journals. In addition, they were asked if they knew anyone working for any class of forestry agency and what they thought about punishing woods burners.

Availability and Use of Radio and TV

It was discovered that almost every individual in the two study communities had access to radio and TV. Altogether, some 82.2 per cent of the respondents said their housing units were equipped with TV receivers in working order. An additional 2.2 per cent of them had TV sets which were not functioning properly. Interestingly, the number of TV receivers owned and used varied somewhat from Chestnut to Beech. In Chestnut only 80.7 per cent of the heads of households reported owning a TV set in working order. By contrast, in Beech 83.7 per cent of the heads of households reported ownership and use of TV sets. The same differential persisted with regards to radios in working order. Although these differences are not statistically significant, they may be indicative of patterns from community to community which could be related to effective communication. It is also interesting that a slightly larger number of households were found in Chestnut without TV or radio than were found in Beech (20 vs. 17, and 19 vs. 13, respectively).

The above findings point one fact out clearly. A majority of the residents of these communities, that is of the client system, could be reached via radio and TV by the public agency system. Conceivably, other communities where high rates of fires persist are also characterized by this potential.

Use of Newspapers and Magazines

Each respondent was asked, "Do you read any newspapers or magazines regularly?" If an affirmative response was obtained the interviewer listed by name the newspapers and magazines which the respondent read.

A total of 134 respondents, just over two-thirds of those interviewed in both communities, indicated that they read newspapers or magazines regularly. Again it is interesting that less reading of this type was done

in Chestnut. Only 64 per cent of the respondents in this community, as contrasted to 73 per cent in Beech, were regular readers. Nevertheless, the important finding for the purposes of this study was the high percentage of residents reading newspapers and magazines regularly.

The most frequently read newspapers were the daily from the closest "big town" and the daily from the nearest metropolis. The newspaper from a second "big town" some distance farther away was third in popularity. Most of the respondents read just one paper regularly, although 27 of them indicated they read two papers most of the time.

The percentage of respondents reading magazines regularly—about 75 per cent—did not differ significantly between the two communities. *The Progressive Farmer* was the magazine read most frequently, with a total of 39 subscribers reported in both study areas. However, it is important to note that 26 of these subscribers lived in Chestnut. In this regard, it may be noted that respondents in this community tended to subscribe to farming magazines and magazines which stressed outdoor living or recreation. For example, 30 persons subscribed to the *Farm Journal* in Chestnut, as contrasted to two individuals in Beech. Further analysis of magazine reading and subscription patterns revealed that publications such as *Reader's Digest, Life, Look,* and *Saturday Evening Post* tended to be more popular in Beech.

Two conclusions seem possible from the study made of the use of reading material. First, a relatively high percentage of people in both areas read or subscribed to a magazine or a newspaper. This fact suggests that this type of mass media can be used by the public agency system to reach a substantial number of people in the client system. The second conclusion is that people in the Beech community were somewhat nationally and internationally oriented, and less vocationally inspired in their reading. This may or may not have some relevance to the fact that there was a lower rate of fire occurrence there.

Acquaintance With Forestry Personnel

It was considered worthwhile to obtain information on what might be called informal sources of knowledge about fire prevention. The most obvious source of such information appeared to be the local people involved in forest work. It should be noted that some of these individuals clearly represented the public agency system, although others did not. Each respondent was asked if he knew the name of his district ranger (U.S. Forest Service), his area forester (Mississippi Forestry Commission), and if he knew any other forester in the area.

Only 12 of the 209 persons interviewed recalled correctly the name of the U.S. district ranger. An additional 12 of them indicated they were acquainted with the district ranger but did not know his name. There was little or no difference between the two communities in this respect. Several respondents explained that the reason they did not get to know the names of rangers was due to the fact that the Forest Service transferred rangers too often. This explanation apparently had some basis in fact, since rangers are transferred frequently.

Some 18 respondents were able to name the area forester representing the Mississippi Forestry Commission, and two others knew him but could not recall his name. This meant almost nine out of every 10 interviewees (88.4 per cent) did not know, or could not identify, this relatively important official.

It appears somewhat incongruent with the above findings that 91 per cent of the respondents were able to give the name of foresters servicing the two community areas other than the district ranger or the area forester. However, the explanation lies in the fact that respondents were allowed to name anyone they thought was a professional forester. A total of 10 different names were supplied to interviewers. Included in this list were names of employees of state, private, and national agencies, many of whom were "non-professional" although they worked for a forest agency.

The conclusion which can be drawn from these findings is that the presence of forest control personnel was known in the two communities; that is, the representatives of the public agency system were known by the client system. However, there seems some doubt that a close liaison had been established between members of the two systems. Thus the potential represented for transmittal of informal fire control messages by members of the public agency system is not too clear.

Acquaintance With Enforcement of Forest Fire Laws

Perhaps the most common way messages are transmitted informally is by word of mouth from one neighbor to another. It was thus felt that some test should be devised for determining how well information relative to forest fires is disseminated in this way throughout a community. The procedure decided upon was to attempt to measure local opinion relevant to law enforcement. This decision was logical for two reasons. First, residents would be reacting to a real situation rather than to an hypothetical one. Second, insight would be obtained regarding sentiments associated with forest fire laws and enforcement techniques.

To this end, each respondent was asked three questions: (1) "Are you in favor of fining a person if that person deliberately set fire to woods he did not own?"; (2) "Are you in favor of putting such a person in jail?"; (3) "Do you know what the penalty for setting fire is in this state?"

These questions assumed a special relevance since two convictions for incendiarism had been obtained by fire control officials just prior to the initiation of this study. The arrest and conviction of these individuals had been widely publicized throughout the county and particularly in the two communities under study. Findings from the questions outlined above represent some of the most interesting responses of the entire study. The explanations and rationalizations for answers provide insight over and beyond that concerning the extent to which fire enforcement information was disseminated in the communities by members of the client system.

The majority of respondents in both communities agreed that woods burners should be fined (Table 3). In Chestnut, 84 of 105 respondents

TABLE 3.—Respondents' Attitudes Toward Fining Arsonists, by Communities

Response	Chestnut	Beech
Yes	84	97
No	9	2
Qualified yes	7	4
Qualified no	—	—
Refused	1	—
Don't know, no response	4	1
Total	105	104
$X^2 = 7.727$		$P < .025$
df = 2 (rows 4,5,6 excluded from computation)		C = .1870

answered "yes" to this question, and in Beech, 97 of 104 respondents answered "yes." In a great many instances the respondents, when asked if they favored fining woods burners, replied that they felt fire laws should be enforced "like any other law." One individual related that at one time he had burned the woods. "When they made it against the law," he added, "I quit." Such responses reflect a positive latent attitude toward law enforcement in general. Persons who are generally "law abiding" will tend to avoid behavior defined as illegal regardless of the nature of one specific law.

It was hoped that a method could be devised to accurately measure how intensely respondents felt about enforcement of fire laws. With this in mind, respondents who favored fining woods burners were asked how much they thought the woods burner should be fined. Respondents who favored imprisoning woods burners were asked how long they felt they should be imprisoned.

Unfortunately, responses to these items were not uniform enough to provide a measure of intensity. When respondents were asked how much or how long they thought woods burners should be punished, the most frequent reply was, "Whatever the judge says." Occasionally they would state, "Whatever the law calls for." In a few instances they actually stated the exact penalty called for by law. Several felt that the fine should not exceed the damages.

One 20-year-old housewife said the woods were so beautiful that anyone who burned them should be fined $10,000. Others, who thought the woods should be burned and felt the government did not do it often enough, felt that there should be no fine at all. Those who responded in this manner usually qualified their answers by suggesting that if a fire got out of control the person who started it should pay for the damages.

Responses tended to form a similar pattern with respect to the extent of imprisonment (Table 4). "It depends on what the judge decides," was a frequent reply. Regarding both fining and imprisoning, a number of respondents who favored such punishment said the age of the woods burner, his criminal record, and the extent of the damages should all be considered in determining the sentence.

The responses to the above questions provided one measure of how intensely respondents felt about enforcement of fire prevention laws, and whether respondents favored fining, imprisoning, or both. Those

favoring imprisonment were presumed to feel more intensely about woods burning than those who favored only fining. Correspondingly, those who favored fining were presumed to feel more intensely about woods burning than those who did not favor fines. Thus, even though a more refined measure was not devised, these items did serve as indicants of three levels of emotional intensity.

TABLE 4.—Respondents' Attitudes Toward Imprisoning Arsonists, by Communities

Response	Chestnut	Beech
Yes	52	73
No	37	11
Qualified yes	4	9
Qualified no	1	5
Refused	1	3
Don't know, no response	10	3
Total	105	104
$X^2 = 28.51781$		$P < .001$
$df = 5$		$C = .349$

Respondents, on the basis of their answers, were separated into three categories: (1) those who opposed fines; (2) those who favored fines only; (3) those who favored fines and imprisonment. Of the 209 persons interviewed, 11 unequivocally opposed fining the woods burner and 48 unequivocally opposed imprisoning the woods burner. There were 179 who unequivocally favored fines and 125 who unequivocally favored jail sentences.

Conclusion

The findings described in this section have important implications for members of the public agency system interested in prevention of forest fires. First, it is clear that the mass media represent a good potential for reaching members of the fire-setting client system with messages designed to change this type of behavior. Second, it is implicit in the findings that a closer liaison between forestry personnel and forest residents would serve to lessen fire setting. Finally, it is encouraging to learn that residents of communities which have high fire occurrence rates know about and in general agree with law enforcement procedures. The latter fact may be a clue to an area worthy of more study.

Recent Exposure to and Sources of Fire Prevention Messages

Once it is known what sources of information are available to residents in communities with high fire occurrence rates, it becomes relevant to ask if fire prevention messages are effectively disseminated by the public agency system through these sources. In an attempt to answer this question, each respondent was asked, "Have you seen or heard anything about fire prevention in the last 6 months?" If the response was affirmative, the respondent was asked to tell where he had seen or heard about fire prevention. Interviewers were instructed as follows: "Attempt to get exact information such as television channel, name of program, name of paper; if sign, where posted; if person, identify by re-

lationship or occupation, etc." This information made possible an analysis of the relative frequencies of the various sources of fire prevention knowledge.

A total of 134 persons (64.1 per cent) responded affirmatively to the question posed. A larger relative number of the residents of Beech than of Chestnut (78.8 per cent and 49.5 per cent, respectively) had heard or seen recent fire prevention messages. This difference is statistically significant,[8] and is in keeping with woods-burning patterns in these communities. The frequencies with which messages were received from the respective media mentioned by respondents are shown in Table 5.

TABLE 5.—Sources of Fire Prevention Messages Received by Respondents During Past 6 Months

Source	Per Cent of Affirmative Responses		
	Chestnut	Beech	Total
Newspaper, local	8.6	17.3	12.9
Magazine or non-local paper	1.9	3.8	2.9
Radio	6.8	10.0	8.6
Television	48.6	68.2	58.3
Formal organization, meeting	1.0	3.9	2.4
Personal contact— friend, official, other	2.0	6.7	7.9
Signs or posters	28.6	59.6	44.0

Television

Television was the medium most frequently indicated as the source of fire prevention messages seen or heard in the last 6 months. Over half (58.3 per cent) of all interviewees reported having seen such a message on TV (see Table 5 for community differences). When respondents were asked to specify the type program they had heard or seen, many replied that the messages were spot advertisements. Some, however, noted that they had heard the "Singing Woodsmen." The county agent's program was also specified by several respondents. Smokey the Bear was often mentioned in connection with TV announcements, and in several instances the respondent added, "Yes, I've seen Smokey the Bear telling us, 'Only You Can Prevent Forest Fires.' "

Television programs not specifically designed for forest fire prevention messages were sometimes mentioned as a source of fire prevention information. In this regard, a few respondents related that they had seen news telecasts the previous summer in which California forest fires were described.

An investigation of the extent to which local TV stations made use of fire prevention materials was undertaken as an adjunct to the study. Pertinent information was obtained from records of the Mississippi Forestry Commission and from log sheets of the two TV stations in the district. This information is presented in Table 6.

[8] $X^2 = 38.51781$, df = 5, P = .001.

TABLE 6.—Frequency of Utilization of CFFP* Material by Local Television Stations

Channel "X"
Period: November, 1965 to February, 1966

	Nov.	Dec.	Jan.	Feb.	Total
6 a.m. to 12 Noon	7	3	5	8	23
12 Noon to 3 p.m.	4	3	9	6	22
3 p.m. to 6 p.m.	1	–	3	2	6
6 p.m. to sign-off	3	4	3	8	18
Total	15	10	20	24	69

Channel "Y"
Period: October, 1965 to March, 1966

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total
6 a.m. to 12 Noon	12	9	7	–	–	4	32
12 Noon to 3 p.m.	–	1	–	–	–	3	4
3 p.m. to 6 p.m.	–	–	–	–	–	–	–
6 p.m. to sign-off	10	8	10	7	7	6	48
Total	22	18	17	7	7	13	84

*CFFP—Official fire prevention material prepared for fire control agencies by the Advertising Council.

Signs and Posters

A program of placing and maintaining heavy-duty fire prevention signs along highways in the study area had been carried on for several years by the U.S. Forest Service. There were four such signs within a 10-mile radius of the two communities. In addition, posters prepared by the Advertising Council[9] had been placed in a few conspicuous places, such as post offices and other public buildings. It should be noted that two reward posters prepared by the local county forestry association were displayed at business establishments in the county seat town. These posters announced cash rewards for information leading to the arrest of persons who violated the statutory woods-burning laws. No such signs, however, were observed in either community.

As many as 44 per cent of the respondents said they had seen fire prevention messages on posters (28.6 per cent of the Chestnut residents and 59.6 per cent of the Beech residents). A number of respondents were so familiar with the messages imprinted on the large wooden signs that they could recall them from memory. Responses such as, "Only You Can Prevent Forest Fires," and "When the Woods Burn, Everybody Loses," were rather frequent.

Newspapers

Local newspapers were mentioned as a source of recent fire prevention knowledge by 12.9 per cent of the respondents. A higher percentage of interviewees in Beech (17.3 per cent) than in Chestnut (8.6 per cent) reported seeing such items in newspapers. Several respondents

[9]The Advertising Council, a national organization founded in 1942, conducts public service advertising and public relations programs. Advertisers and advertising media are encouraged by the Council to contribute time and space, while advertising agencies are requested to supply creative talent and facilities to further timely national causes.

elaborated by telling the particular way in which the message was conveyed. A few mentioned editorials, but most respondents indicated they had seen fire prevention emphasized in newspapers in the form of spot advertisements. Two respondents reported that they had noticed newspaper accounts of money contributed to the county by the U.S. Forest Service.

Radio

Radio ranked fourth (8.6 per cent) among the sources of fire prevention messages named. The relatively few respondents who mentioned radio (6.8 per cent in Chestnut and 10.6 per cent in Beech) seemed to be favorably impressed by the message broadcast.

Personal Contacts

Personal contacts with friends or officials ranked as the fifth most frequently mentioned source of fire prevention information within the past 6 months (Table 5). Direct contact, since it involves personal influence, is regarded by many sociologists as having great potential for bringing about social change. Generally it appeared that personal contact with forestry personnel resulted in favorable responses.

Other sources of fire prevention information mentioned were formal organization meetings, magazines, and non-local papers. However, none of these sources was mentioned by more than 5 per cent of the respondents.

The "Lassie" Program: A Special Investigation

At the time of the survey a forest ranger was being featured in a leading role on the "Lassie" television series. Previously, this role had been cast as a farmer. It was felt that it would be interesting, and perhaps important, to find out the extent to which residents of the study area were aware of the role being played in this series. With this thought in mind, two pertinent questions were included in the interview schedule. Respondents were asked, "Have you seen the Lassie program on TV this year or not?" and "What does Lassie's master do for a living?"

A total of 35.9 per cent of the respondents indicated that they had viewed the Lassie program within the last year. There was no appreciable difference between the two study communities in the percentage of respondents reporting having seen the program. This audience is remarkably high in view of the fact that the closest television station did not telecast the Lassie program. It could be viewed only on broadcast channels used by somewhat distant cities. Thirty per cent of the respondents said Lassie's master was a forest ranger. An additional 8.6 per cent identified Lassie's master as a farmer, indicating they remembered the old series. This high recall suggests that the Lassie program has a strong impact. It may be that such programs are worthy of more consideration as possible mediums for changing fire behavior patterns.

Conclusions

The above described findings are interesting in several ways. They indicate that fire prevention messages are being received by the client

public—that is, communities with high fire occurrence rates. They also indicate which media of communication are most often associated with such messages. However, there is no indication of the effectiveness of these messages, except the slight association between lower fire rates in Beech and the higher relative number of persons reporting having seen or heard fire prevention messages in this community. The question of selective perception and retention of fire prevention knowledge is explored in the discussion which follows.

Selective Perception and the Effectiveness Of Fire Prevention Messages

It was determined, as reported in previous sections, that residents in woods-burning areas have ready access to and use both formal and informal means of communication. These findings leave open two questions: How effective are the messages received, and what is the possibility of increased use of the available means for dissemination of fire prevention messages? Information obtained in an attempt to answer these queries is presented here.

Researchers who deal with problems of mass communication are aware of a phenomenon which they refer to as "selective perception." This term is used to indicate a tendency on the part of individuals to "see" or "hear" only those things in communications which are in accord with their existing attitudes and interests.[10] When individuals are exposed to advertising and other material with which they are unsympathetic, they often seem not to perceive the messages, or to recast and interpret them to fit their predispositions. Three different approaches were used in an attempt to determine the degree and significance of selective perception of fire prevention messages.[11]

Interpretation of Fire Prevention Slogans

The first approach used to test selective perception was simple and direct. Four widely used fire prevention slogans were read to the respondents and they were asked to tell what the slogan meant. This procedure was designed to determine the level of knowledge as well as the selective perception of the respondents. The slogans were: (1) "Forest Fires Destroy Watersheds"; (2) "Please, Only You Can Prevent Forest Fires"; (3) "Fire Distroys Wildlife," and (4) "The South Is Robbed by the Malicious Woods Burner: Help Stop Him."

About 45 per cent of the respondents in both communities gave a response judged to be accurate with regards to the slogan, "Forest Fires Destroy Watersheds." A somewhat smaller percentage (about

[10]John W. Riley, Jr. and Matilda White Riley, "Mass Communication and the Social System," Robert K. Merton, *et al* (editor), *Sociology Today* (New York: Basic Books, 1959), pp. 537 ff.

[11]William S. Folkman's study in Batte County, California approached this general problem in another manner. See *Residents of Batte County, California: Their Knowledge and Attitudes Regarding Forest Fire Prevention*, Experiment Station, U.S. Department of Agriculture, Forest Service, 1965.

40 per cent) of the interviewees in Chestnut and Beech correctly interpreted the slogan, "The South Is Robbed by the Malicious Woods Burner: Help Stop Him." The remaining two slogans, perhaps because of their semantic clarity, were correctly understood by just about all respondents. Whether or not respondents understood the slogans, they were likely to give varied reactions to them. These reactions tended to follow certain patterns. This fact suggested an analytical procedure based on catergories of answers rather than individual slogans. Seven classes of answers were delineated and are presented here.

Slogans Understood: Stimuli for Negative Response.—In several instances it was clear that the respondent understood the content, yet disagreed with the message presented. Such a response was recorded in Chestnut when the fourth slogan was read. The respondent was 36 years of age, had completed the eighth grade, had lived in the community for 36 years, and owned a farm of 160 acres. Though the respondent was very cooperative, he had strong negative attitudes about fire control agencies. It was learned that he had been convicted for woods burning (2 years before the interview was conducted) and given a suspended sentence. He was a dairyman with 45 dairy cattle. When asked what kind of job he thought the forest fire control agencies were doing in the area, he responded, "poor."

"The South never was robbed until they quit burning the woods. People can't have hogs or cattle or sheep because of the ticks." This was his response to the fourth slogan. It is rather clear that he understood the message but disagreed with it heartily.

Slogans Understood: Stimuli for Positive Response.—Many respondents revealed a knowledge of the content of the message and then indicated an agreement with the statement. One such respondent was a Negro who lived in the Beech community and who was 47 years of age and unemployed. He described himself as a "handyman." He had lived in the community 25 years and owned 20 acres of land. Though he rated a forest ranger low in the occupational prestige test, he indicated that he felt the fire control agencies were doing an "excellent" job in the area. In fact, he said they were like a "fire department" to him.

When read the third slogan he responded, "Fire destroys deer, quails, and all animals and that's why I'm glad we have protection." Here we see an understanding of the statement and an agreement with it.

A similar response was recorded in Chestnut. The interview was conducted in a home so small the interviewer did not see how 10 people could possibly live in it. The area around the house was trash-filled, the car was not in running order, and the head of the house listed his income in 1964 as less than $2,000. When read the fourth slogan he responded, "He needs to be stopped in any way possible." Again, here is evidence that the message had been correctly perceived and the respondent agreed with it.

Some of the respondents elaborated on the slogans. One person in Chestnut elaborated (on the fourth slogan) that the South was robbed

because of the industry that was lost and the loss of material used in building homes. Another said "This (timber) is all the South has and we should do our best to take care of it."

When read the third slogan some respondents explained that fire destroyed the food which the animals needed for survivial. One said, "It doesn't leave the animals anywhere to live. It is like burning their house."

These are just a few of the many responses that could be used to illustrate this type of response. Indeed, the majority of responses appeared to fall into this category.

Slogans Misunderstood: Stimuli for Negative Response.—Occasionally it was evident that the message was not clearly understood, yet the response was negative. An explanation of this type response lies in the individual's unique lack of ability to perceive; he tends to be critical of anything associated with the fire control agencies.

One of the clearest examples is afforded by the response of an individual from Chestnut described earlier. He had been previously convicted of woods burning and was critical of the total fire control effort in the area. When read the first slogan he replied, "I don't believe it." When the interviewer questioned him about the meaning of a watershed, he replied that a watershed was "the shades over the water." Thus, even though he did not understand the exact meaning of the message, he perceived its source as the fire control agencies and reacted in a negative manner.

Slogans Misunderstood: Stimuli for Positive Reaction.—Just as some individuals tended to react unfavorably to anything connected with fire control, some individuals were likely to agree with anything which tended to be favorable to the effort. These individuals apparently interpreted the statements in the over-all context of the U.S. Forest Service and reacted favorably to the slogans even though they did not fully comprehend their meaning.

One individual, a resident of Chestnut for 30 years, responded, "I agree," when read the first statement. He felt that the Forest Service was doing a "good job" in the area and ranked the forest ranger as holding a fairly prestigeful occupation. Though he indicated a strong agreement with the first slogan, he admitted when questioned that he had no idea what a watershed was.

This response, though opposite in quality from the one described in the previous section, is explained by the same underlying principle; that is, the recipient's perception of the communicator. Since he tended to be favorable toward the Forest Service, he tended to be positive in his response to its messages even though they were not clearly understood.

Value Judgments Only—Negative.—Some of the respondents would not attempt to explain what the slogans meant but merely agreed or disagreed with them. This was true even though interviewers attempted to gain additional statements and explanations from them.

One man from Chestnut, 39 years of age with a tenth grade education, responded, "I wouldn't think so," when read the fourth slogan. He consistently revealed a negative attitude toward the Forest Service, and ranked the forest ranger lowest in prestige among similar occupations. He said, "They push people around." Furthermore, he asserted disagreement with imprisoning of woods burners and said he did not know what kind of job forest fire control agencies were doing in the area. From his responses to other slogans it is evident that he had an intelligent comprehension of the content of the messages. For example he said, as a response to the first slogan, that fires caused erosion, a fact which approximately half the respondents were unaware of.

It is clear, then, that he simply disagreed with the slogan and did not feel inclined to explain or elaborate. It is safe to assume that he either ignores or disagrees with the slogans whenever they appear and they are probably ineffective in changing his woods behavior.

Value Judgments Only—Positive.—Only a few of the respondents gave negative value judgments of the slogans read (the highest total for any one slogan was five such responses). In contrast, the number was considerably higher for those who gave a positive value judgment only. Those who disagreed usually felt a need to explain, but this was not true of those who agreed.

For the entire study (which included 209 interviews), there was a total of 65 responses where only a positive value judgment was recorded. The range was from six such responses for the slogan concerning watersheds to a total of 23 such responses for the slogan, "Fire Destroys Wildlife." This would indicate that the value judgment was not simply a way of disguising ignorance of the message's content, since the watershed slogan had the smallest number of such responses.

Ambivalance and Distortion.—Quite frequently interviews were conducted where the subject agreed in part with the statement and disagreed in part. Such was the case when a 51-year-old woman from Chestnut was interviewed. She had lived in the community 25 years, had completed the eighth grade, and was married to a woods worker employed by a small local firm. She felt that forest fire control agencies were doing an "average" job in the area, but she was not in favor of fining a person who deliberately set fire to woods he did not own. In fact she responded, "I would be scared to fine him."

Her family was apparently very religious; the husband was a Sunday school superintendent at a local Baptist church, and their only magazines and periodicals were listed as the Bible and religious literature. It would seem that the family knew certain persons who were woods burners and were possibly intimidated by them.

Ambivalence regarding the goals of fire control agencies was clearly revealed in her response to the slogans. When the third slogan ("Fire Destroys Wildlife") was read, she replied, "Yeah, but the snakes need to be killed." This response indicated a recognition of the danger of fire to woods animals and game but an allegiance to a common rationale

for woods burning; that is, that fires destroy insects and snakes. When the fourth slogan was read ("The South is Robbed by the Malicious Woods Burner: Help Stop Him") she responded, "Oh yeah! But it depends on where they start them." This type response was uniform for the entire interview.

Ambivalence was also noted in the responses of another person from Chestnut, though his responses were more decidedly negative than those in the interview just cited. When the third slogan ("Fire Destroys Wildlife") was read to him he replied, "In some it (fire) does; then, it helps by killing snakes, ticks, and fire is good for quails." In other responses he indicated a decidedly negative attitude toward the Forest Service.

This type of response was not limited to Chestnut. It was noted almost as frequently in Beech. A 71-year-old man from Beech who had worked with the Forest Service for 15 years and had since retired revealed ambivalence on three of the slogans which were read to him. Even though he had worked for the Forest Service he ranked forest ranger as an occupation along with clerk in store, saying, "I don't think anything of either one. There's no job in it; they don't do nothing but just throw away good time." He felt that forest fire control agencies were doing an "average" job, in spite of the fact that he added, "They haven't done no good, the people have done it themselves."

His response to "Please, Only You Can Prevent Forest Fires" was, "This reminds us not to burn the woods *except* at specific times under controlled conditions." When the third slogan was read he replied, "If the woods are burned the quail won't reproduce and the eggs are destroyed. If the woods are not burned periodically, however, the ticks will take over." To the fourth slogan ("The Malicious Woods Burner") his response was, "True *to a certain extent*. A lot of burning is strictly for meanness."

A fairly consistent pattern was thus noted. It would appear that persons who respond in this manner are not affected in any significant way by the messages which are displayed. The messages are simply distorted or readjusted to fit the particular needs and predispositions of the respondent.

Summary.—The range of responses to fire prevention slogans indicated in the preceding paragraphs substantiates what has been previously suggested—and in some cases experimentally confirmed—in the communication literature. The principle of selective perception can be said to be very much in evidence when local inhabitants of forest regions are confronted with fire prevention messages.

To recapitulate, the findings of this study relative to the selective perception of fire prevention slogans are that: (1) they are understood and stimulate positive response; (2) they are understood and stimulate negative response; (3) they are misunderstood and stimulate positive response; (4) they are misunderstood and stimulate negative response; (5) they stimulate value judgments positive and negative; (6) they are distorted in terms of the value orientation of the receiver.

Greyhound

Elsie the Cow—Bordens

The Jolly Green Giant

Smokey the Bear

Dog and Phonograph—RCA

Chevrolet Emblem

FIGURE 1.—Mass media symbols employed.

The second approach to the determination of patterns of selective perception was more general in nature.

During the course of each interview the respondents were requested to identify, on the basis of photographic reproductions, six advertising symbols. The symbols selected for the experiment were the Greyhound (Greyhound Bus Lines), Elsie the Borden Cow, the Jolly Green Giant, Smokey the Bear, the RCA Dog and Phonograph, and the Chevrolet emblem (Fig. 1).

Four of the symbols selected were similar in that they were animals (the Greyhound, Elsie the Borden Cow, Smokey the Bear, and the RCA Dog and Phonograph). The organizations represented by the symbols were varied so that a cross-section of mass media symbols utilized in the U.S. would be presented.

Whenever a name was formally associated with a particular symbol, the printing of the name was photographically removed. If the symbol had a name (such as Elsie), both the name and the organization represented were requested by the interviewer.

The data from the symbol experiment were useful in more than one respect. It was possible to determine the extent to which the fire prevention symbol—Smokey the Bear—was recognized by residents of the two communities.

The majority of the symbols utilized in the experiment had been in use longer than the fire prevention symbol. Each, with the exception of Smokey, was promoted by means of commercial advertising, whereas Smokey the Bear usually appeared in the mass media as a public service feature.

The fire prevention symbol, despite the disadvantages of its relatively brief national exposure and a non-commercial base, fared quite well when compared with the other symbols. On the basis of correct identifications, it was found that 82.3 per cent of the subjects knew the name of the fire prevention symbol and could tell what was symbolized (e.g., "fire prevention," "forestry," "the Forest Service"). An additional 7.1 per cent of the respondents made partial identifications; that is, they knew what was represented but did not know the name of the symbol, or vice versa. Thus, only 10.6 per cent of the respondents had no apparent conception of the identification or meaning of the fire prevention symbol (the average age of these persons was 69.9 years).

There was no statistically significant variation between the two study communities with respect to the number of correct identifications of the fire prevention symbol. There were 87 correct identifications plus 8 partial identifications by Chestnut residents. There were 85 correct identifications plus 7 partial identifications by Beech residents.

The fire prevention symbol ranked second in terms of relative frequencies of respondents' correct identification when partial or incomplete responses were omitted from tabulations (Greyhound, first; Elsie the Borden Cow, third). The number of correct identifications when partial or incomplete responses were included was exactly equal for

Smokey the Bear and Elsie the Borden Cow (Greyhound, third).

The above discovery leads to an important conclusion and at the same time raises questions which need further study. It is reassuring to learn that Smokey the Bear is as well known as other popular advertising symbols, and that his message is understood. In fact, in the study areas Smokey seems to have done his job very well. However, his job is simply conveying a message. The problem which remains is how to motivate those who receive and understand his message to act accordingly.

Perception and Interpretation of Fire Prevention Posters

The third and final approach to the testing of selective perception utilized posters.

Identical fire prevention posters were placed at conspicuous locations in the study area—two in each community. Two weeks after installing the posters the field work began.

During interviews, each subject was asked, "Are there any fire prevention signs or posters around here?" Then each was asked, "What does the sign say?" and "Is there a picture on the sign (or poster)?" If these questions were answered affirmatively the respondent was requested to describe the poster.

Then the interviewer displayed photographs of four fire prevention posters (Fig. 2), one of which was the correct choice. The respondent was asked, "Have you seen one of these in the neighborhood or not?" Upon replying "Yes," the respondent was told to identify the one he had seen.

One element of the experiment proved to be of little value. Very few of the respondents would even attempt to describe the poster. Often those who did obviously confused it with other signs and posters within the area. Thus, this part of the experiment, which had been designed to make possible a measure of selective distortion (that is, the manner in which subjects distort messages to "fit" their cognitive structure) had negligible utility.

A further limitation of the experiment stemmed from the necessity of having to make the dubious assumption that all individuals would have had equal exposure to the posters. An attempt was made to place the posters in conspicuous locations within each community. But even so, residents traveled by the poster sites at differential rates. Some respondents probably never had the opportunity to see the posters at all. It was assumed that the differential exposure rates were equal in both communities, but it is not known that this was the case.

It was found that fire prevention messages were perceived-recalled with greater frequency in Beech than in Chestnut. In the latter there were 19 correct identifications, 34 incorrect identifications, and 52 non-responses. In Beech there were 30 correct identifications, 36 incorrect identifications, and 37 non-responses. The difference between these proportions was significant at the .05 level of probability.

The second phase of the experiment involved requesting school children from the two communities to identify the fire prevention poster

FIGURE 2.—Fire prevention posters.

on the basis of individual recall processes. The fact that children from both study communities attended one agricultural high school made for practically ideal experimental conditions. The researchers wished to know whether perception-recall rate differentials would occur when school children from the two communities participated in the experiment.

Several copies of the poster utilized in the experiment just described were placed in conspicuous places along hallways of the high school by the principal. The fact that these posters were an element of the perception-recall experiment test was not divulged to the students.

On the day of the experiment all 50 ninth graders were brought into one room. Included were 16 students from Beech and 15 from Chestnut. In addition there were 19 students who lived in other nearby communities and neighborhoods. One by one these students were shown photographs of the four posters and asked to choose the one they had seen.

Nine of the 16 Beech residents and 5 of the 15 Chestnut residents made correct identifications. Seven of the 19 residents from the other communities made correct identifications. The difference between these proportions was not statistically significant.

The first finding from the above described poster experiment is not altogether encouraging. Hardly one-third of the respondents in both communities and less than half the school children tested could correctly identify the posters. However, the significance of this pattern of responses is not too clear. It may be that, for this type of media, the scores are good. Further comparative studies seem in order.

Two discoveries made in connection with the poster studies do appear to have clear significance. First, the fact that residents of Beech identified the signs more frequently, assuming other factors were equal or nearly so, suggests that people who believe in or practice a certain type of behavior are more likely to perceive messages which support this behavior. Since Beech residents set substantially fewer fires, they were more cognizant of fire prevention posters. This behavior has been observed many times, as pointed out in the introduction to this chapter. The second discovery worthy of note is that persons with favorable attitudes toward forestry, and with higher incomes and higher education, tended to identify the posters in greater relative numbers. This is in keeping with the findings of many previous studies that socioeconomic factors are related to given behavior patterns.

Conclusion

The findings of the study reported in this section have already been outlined. It is obvious that selective perception with regards to fire prevention messages is operative within communities where high incendiarism is found. The tests and procedures used shed some light on the ramifications of this phenomenon. The findings—that slogans are perceived and understood differentially and are likely to be distorted to fit the individuals' value orientations; that the fire prevention symbol Smokey is well known, if not too widely heeded; and that posters are

seen and appreciated more by persons in sympathy with forest fire prevention—all seem to have relevance for persons planning programs of fire prevention.

Summary and Implications

The findings and implications of the study may be summarized as follows:

1. **Finding:** Members of the community with a high rate of fire occurrence, as compared to residents of the community with a low rate of fire occurrence, were characterized by more open range grazing, lower levels of education, an unfavorable evaluation of activities of foresters, and an identification with the lower social classes.

Implication: High fire occurrence rates are related to a "woods-burning environment" created by a set of determinable economic, social, and psychological factors.

2. **Finding:** Radios and TV's were widely owned and used and newspapers and magazines were available to a substantial number of persons in the study communities.

Implication: These mass media represent an important potential for communication of fire prevention messages.

3. **Finding:** The presence of Forest Service and State Forestry Commission personnel in the communities was known, but acquaintance with them was minimum and quite casual in nature.

Implication: A closer liason between Forest Service and Forestry Commission personnel and forest residents would serve to strenghten communication of fire prevention messages.

4. **Finding:** Most residents of the study communities knew about and agreed, generally speaking, with law enforcement procedures.

Implications: Two things seem obvious from this finding: (1) there are efficient informal channels for communicating certain types of messages related to fire-setting practices, and (2) the residents of forests where high fire rates occur do appreciate the "law," despite some misgivings about fire prevention laws.

5. **Finding:** Fire prevention messages had been seen or heard by approximately two-thirds of the community residents within the past 6 months.

Implication: The work of fire prevention agencies is in evidence and having some type of impact.

6. **Finding:** Television, signs, and posters—in contrast to informal methods—are the media by which fire prevention messages are most frequently received, but only about half of the respondents were reached in this manner.

Implications: Two obvious implications of this finding are: (1) mass media can be used effectively to communicate fire prevention messages, but current practices are not too efficient, and (2) informal sources are

not fully utilized in the work being done to prevent fires.

7. **Finding:** Indirect messages conveyed via "entertainment" programs are effective in conveying fire prevention messages. The "Lassie" program is a case in point.

Implication: High-level planning might well consider such approaches.

8. **Finding:** The principle of selective perception is very much in evidence when inhabitants of communities where high fire rates occur are asked to interpret fire prevention slogans. Seven different reactions can be identified: (1) slogans are understood and provide a stimulus for a positive reaction to fire prevention; (2) slogans are understood, but provide a stimulus for negative reaction to fire prevention; (3) slogans are misunderstood and still provide a stimulus for a positive reaction to fire prevention; (4) slogans are misunderstood and provide a stimulus for a negative reaction to fire prevention; (5) no indication is given that the slogan is understood, but a positive value judgment of fire prevention is nevertheless given; (6) no indication is given that the slogan is understood, but a negative value judgment of fire prevention is nevertheless given; (7) interpretation of the slogan is ambivalent and distorted, and interviewee shows little coherence and consistency in interpretation of fire prevention messages.

Implication: Certain factors, or characteristics of individuals, have a bearing on the meanings which are attached to fire prevention posters.

9. **Finding:** The symbol used to promote fire prevention—Smokey the Bear—is as well known as other widely used advertising symbols.

Implication: Use of this symbol in connection with fire prevention messages is and can be justified.

10. **Finding:** Fire prevention posters of the permanent outdoor type were correctly remembered by only a relatively small percentage of individuals—approximately one-fourth. Ninth graders show a slightly higher recall rate for posters placed on school bulletin boards.

Implication: Although some good is accomplished by fire prevention posters as now deployed, serious study should be given to improving the efficiency of this means of communication.

11. **Finding:** Perception and retention of fire prevention messages was found to be related to the respondents' attitude toward forestry work, which in turn was related positively to high income, high education, and related variables.

Implication: This finding, when related to the other findings relative to selective perception and recall of fire prevention messages, suggests that individuals perceive-recall those messages which are congruent with their existing beliefs and attitudes. The implication is that mass communication programs designed to change forest residents' behavior must be cast so as to fall within their value orientations if they are to achieve maximum effectiveness.

Recommendations

This study adds to the fund of information about the behavior patterns of woodland residents. In the light of the implications outlined, several general recommendations seem in order. First, it is recommended that those persons with roles as fire prevention change agents plan their programs after careful appraisal of the data which are now available. The first strategy suggested is that of working through the norms; that is, the attitudes, values, and beliefs of the people who live in high incendiarism areas. In this regard, residents of both study communities were determined by questioning to feel a deep loyalty for the South and for their state. A fire prevention program for the South might well tap such sentiments by relating fire prevention to regional economic growth, etc., as well as those outlined in the preceding discussions. Where steps have already been taken in this direction, such as those by the U.S. Forest Service, efforts should be continued and expanded.

Inhabitants of the communities studied reported knowing practically nothing about the tangible benefits for their areas which are derived from forestry activities. Based on this finding, it is recommended that forestry officials plan an information program designed to reach all the inhabitants of a community, not just public officials and prominent landowners. Findings of this study related to mass media and informal methods of communication offer guidelines for attaining this objective.

One discovery in this regard is worthy of note. Most of the respondents did not know the forest rangers. Foresters involved in silvacultural and administrative responsibilities apparently have had little time available for becoming acquainted with and disseminating forestry information to local residents. Also, ability to effectively communicate with residents seems to vary from forester to forester. Fire control agencies might well consider assigning men with talent in communication to areas of high fire-rates. The responsibilities of these specialists would be restricted to "selling" forestry to the inhabitants of the area; in other words, conducting public relations with woodland residents. These men would, thereby, supplement the total forestry activities of the area. Preliminary efforts in this direction in Mississippi appear to be useful.

It is evident that there is popular support for enforcement of woods burning laws in the communities studied. Fire prevention programs should aim at intensifying this already existing attitude. Procedures utilized by certain cities and states to promote public acceptance of enforcement of highway safety laws might well provide a pattern for more comprehensive fire prevention programs.

Finally, it is clear from the study that fire prevention messages, so vitally important to their senders, are often no more than a negligible part of the outside environment of forest residents. A complete understanding of this life with its demands, opportunities, and expectations must be fully grasped before fire prevention messages can be designed and "sent" in such a way as to command a high degree of correct perception and a reasonably long period of retention.